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ABSTRACT

This paper presents arguments in favor of adding reading achievement at age seven to the National Assessment of Educational Progress (NAEP). Progress in reading is developmental. At age seven, most children are in the midst of the crucial stage of beginning reading; by age nine, those making normal progress have moved beyond this stage. Much of what is involved in mature reading is developed during the beginning stage of reading. There is a substantial gap in NAEP's evaluation of reading progress because of the lack of early testing. At age seven (unlike at later ages) important aspects of reading proficiency can be isolated and tested separately. Thus, more than one single scale of overall reading proficiency can be provided. At this age, there is still a wide range of proficiency in certain pre-reading skills that are important predictors of reading ability. Assessment of these skills would provide precise information concerning children who are relatively poor readers. The validity of differing interpretations of the results of recent NAEP assessments, as well as other hypotheses, can be tested with data collected at age seven. (LMO)

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Assessment at Age Seven

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(Prepared for the Subcommittee on NAEP Reading Assessment,
chaired by Jeanne Chall)

This paper presents arguments in favor of assessing reading achievement at age seven. This is one of several possibilities for additional NAEP testing, and, of course, there are other suggestions for modifying NAEP procedures as well. A decision to conduct an age-seven assessment must be evaluated in conjunction with a consideration of these other alternatives, which are not examined here.

Research and development over the past few years has underscored the great importance of beginning reading. Yet NAEP, our nation-wide assessment, does not test children during this period. Assessment at age 7 would be highly desirable.

I. Progress in reading is developmental. At age 7, most children are in the midst of the crucial stage of beginning reading. By age 9, children who are making normal progress in reading have moved beyond this stage.

Chall (1983a) points out that children go through a series of specific and distinct stages of reading, each marked by different characteristics, as they progress from beginner to highly-skilled reader. At about grade 4 -- just at the point of the first NAEP assessment -- there is a major shift. Before this point, says Chall, reading is done on texts that represent the language and the knowledge that the reader already has (through listening, etc.). Texts read at or beyond grade 4 are different in content, in linguistic complexity, and in cognitive requirements. Thus different demands are made on the reader. At the earlier stage, proficiency in decoding and in word recognition are paramount (Gough & Hillinger, 1980), along with automaticity in these

skills (LaBerge & Samuels, 1976). At later stages, these same skills are required, but in addition, the reader also must utilize higher-order comprehension strategies, both cognitive and linguistic (Perfetti & Lesgold, 1979; Stanovich, 1980). The differences are sufficiently striking that Chall (1983b) talks about two kinds of reading.

A substantial part of what is involved in mature reading is developed during the beginning stage of reading. Rate of progress through this stage varies a great deal. There is a substantial gap in NAEP's evaluation of reading progress because of the lack of early testing.

II. At age 7 (unlike at later ages), important aspects of reading proficiency can be isolated and tested separately. Thus more than a single scale of overall reading proficiency can be provided.

At age 9, NAEP assesses reading comprehension only. Quite reasonably, a single scale score is provided, for comprehension achievement cannot be justifiably broken down into more specific performances. But reading comprehension is determined by many factors. To some extent it is a function of general comprehension ability -- which is related in a complex way both to language ability and to intelligence, and to some extent it is a function of specific reading skills. There is no way to tease out the effects of the various factors on the basis of the NAEP scores. It should be noted that studies of individual differences in the cognitive subskills underlying reading indicate that these subskills are initially (at the first grade level) not strongly interrelated. As reading proficiency increases,

the correlations among the subskills increase (see Curtis, 1980; Guthrie, 1973).

At age 7, certain important component skills can be isolated and tested separately. Word recognition, long considered a fundamental component of and predictor of reading ability, is related to reading comprehension ability. This relationship is seen even in proficient adult readers (Frederiksen, 1978), but it is especially strong in the elementary grades (Curtis, 1980; Stanovich, Cunningham & Feeman, 1984). These correlations typically range from .50 to .80 (Stanovich, 1986).

There are two aspects of word recognition. Sometimes words are recognized as whole units. When children acquire the skill in this manner, it is called the development of sight vocabulary. Another basis for word recognition is decoding ability, i.e., the child uses spelling-to-sound correspondences to break the code. At some point in learning to read, a child must learn to decode (Gough & Hillinger, 1980; Venezky & Massaro, 1979). Normal development in reading is characterized by an increase in decoding ability and in the size of the sight vocabulary, but, according to Snowling (1980), the development of reading ability in dyslexics depends primarily on the development of sight vocabulary, since the increase in decoding skill is so delayed in this group. Naming pseudowords is a task that differentiates good and poor readers particularly well; this is a task on which other word recognition skills such as those involved in recognizing sight vocabulary, cannot be used; decoding ability is essential.

Individual differences in the specific reading skills discussed

above account for a great deal of the variance in reading scores (Stanovich, 1986). However, other processes are also related to reading ability. Performance on intelligence tests correlates with reading achievement. This correlation usually ranges from .3 to .5 in the elementary grades and from .6 to .75 for adults (Stanovich, Cunningham & Feeman, 1984). Listening comprehension, which is highly linked with intelligence, is correlated with reading skill at all levels -- again, like IQ, the correlation increasing with the age of the sample tested.

Poor readers are particularly disadvantaged with respect to listening comprehension (Smiley, et al., 1977; Vellutino, 1979). Such difficulties with general language comprehension interact with difficulties arising from inadequate specific reading skills and also with difficulties in metacognitive processing and result in poor performance at advanced reading levels.

It is important, at age 7, to evaluate, in addition to reading comprehension, both aspects of word recognition, decoding ability and sight vocabulary, and listening comprehension.

This recommendation to assess isolable components of reading does not imply that there is no difference between performance on test items where a component skill is presented in isolation and performance in "real" reading, which involves that skill along with many others. But isolated-skill items can be developed so that the test can be used not only (1) to provide a single composite score of reading proficiency but also (2) to provide information concerning the relative strengths and weaknesses of various specific factors involved in the composite score. (Moreover, at

least some of these components are in themselves directly teachable, so that the test results might also be used to guide instruction.)

III. At age 7, there is still a wide range of proficiency in certain pre-reading skills that are important predictors of reading ability. Assessment of these skills would provide precise information concerning children who are relatively poor at reading.

The tasks of phonemic analysis and phonemic blending, often called phonemic awareness skills, represent an important component of decoding: the relevant units in the sound streams must be isolated in order that the appropriate mappings between orthography and sound may be made. Performance on phonemic tasks improves with age (Calfee, Lindamood & Lindamood, 1973), and performance on these tasks at early ages is significantly correlated with later reading proficiency (Liberman, 1973). Moreover, there is evidence that training in these skills leads to improvement in reading (Venezky, 1976; Williams, 1980).

Age seven would be a good point at which to assess these skills; age nine is too late. Fox and Routh (1983) tested nine-year-olds whom they had originally tested at the completion of the first grade. Those who at the original testing scored poorly on phonemic segmentation later scored at the ceiling on that test, but were considerably below average in reading and in spelling. Fox and Routh suggest that readers who can be identified as problems on the basis of phonemic segmentation skills may continue to have reading problems into adulthood.

Ehri (1979) has pointed out that phonemic skills may be a consequent of the development of reading skill as well as an antecedent. Perfetti, Beck and Hughes (1981) suggest that phonemic blending is a necessary precursor of reading whereas segmentation is enhanced by reading instruction. (Such data may aid in the selection of the particular phonemic tasks that will be most valuable in assessment.)

Thus pre-reading skills, specifically phonemic tasks, should be assessed at age 7.

IV. The validity of differing interpretations of the results of recent NAEP assessments, as well as other hypotheses, can be tested with data collected at age 7.

A. In 1980, 17-year-olds scored lower than 17-year-olds tested in 1971, especially on inferential comprehension. One interpretation of this finding is that those tested in 1980 had had a more intensified basic skills approach in their elementary-grades reading instruction, which had a detrimental effect on their Grade 12 performance. Chall (1983b, 1986) disputes this interpretation, pointing out how unlikely it is, in fact, that 17-year-olds actually had been given a strong skills background. She argues that stronger beginning reading programs are responsible for the improvement of the 9-year-olds and 13-year-olds tested in 1980. The relationship of reading achievement and type of reading instruction should be evaluated. Data on seven-year-olds would be particularly relevant to such a study because of the potential availability not only of a single

composite performance score but scores on a variety of important reading components.

B. Important information as to how progress in reading differs for various subgroups within the NAEP sample could be collected. This would be particularly valuable if collected at age 7 when specific components of reading were measured separately. Findings from other smaller-scope studies indicate the value of such data-collection. For example, Chall and Snow (1982) found that low-SES children did not differ from middle-class children in reading, writing and word meaning at grade 2, but their performance was slightly below that of middle-class children at grade 4 and substantially below at grade 6. What are the trends in reading proficiency for particular subgroups? Can their later performance be predicted on the basis of scores on particular components of reading as assessed at age 7? What is the relationship of such trends and (a) type of instruction and (b) home variables?

C. Underlying the field of special education is the assumption that learning-disabled children have some kind of highly specific cognitive deficit that differentiates them from other "slow" children. Since the learning-disabled population exhibits its performance deficits primarily in the area of reading, this assumption suggests that there is some specific pattern of reading performance that characterizes these children. (The identification of such a pattern might well lead to specific remediation procedures.)

Most evidence to date, however, indicates that the cognitive difficulties of reading-disabled children are rather general (Stanovich, 1986;

Williams, 1986). It may be that the early performance of disabled children is characterized by a highly specific deficit. Then, after entering school, failure in reading may cause motivational problems that in turn interfere with cognitive activity in general (see Stanovich, 1986; Torgesen & Licht, 1983). A comparison of the patterns of performance on specific component skills exhibited by children (age 7) who fall at different levels of overall reading achievement, broken down in terms of particular subgroups of the population (gender, race, home variables, instructional factors, etc.) would contribute to our understanding of this issue.

Designing such studies as outlined above -- done in conjunction with the overall planning of the assessment, not ad hoc -- would add greatly to the value of NAEP.

V. Group testing is feasible at age 7.

The long and successful use of standardized tests at this age level attests to this point. It will be essential to incorporate oral presentation of test items into the procedures. This should not present serious problems.

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